



Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-277



Airborne Warning and Control System Block 40/45 Upgrade (AWACS Blk 40/45 Upgrade)

As of FY 2017 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
\$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
\$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
\$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget

PE - Program Element

PEO - Program Executive Officer

PM - Program Manager

POE - Program Office Estimate

RDT&E - Research, Development, Test, and Evaluation

SAR - Selected Acquisition Report

SCP - Service Cost Position

TBD - To Be Determined

TY - Then Year

UCR - Unit Cost Reporting

U.S. - United States

USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name

Airborne Warning and Control System Block 40/45 Upgrade (AWACS Blk 40/45 Upgrade)

DoD Component

Air Force

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References

SAR Baseline (Production Estimate)

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated May 1, 2013

Approved APB

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated October 20, 2015

Mission and Description

The Airborne Warning and Control System (AWACS) provides a highly mobile, flexible, survivable theater Battle Management (BM), Wide Area Surveillance, and Command and Control (C2) capability. It is capable of detecting, identifying, and tracking airborne and maritime targets at extended ranges as well as identifying air/ground emitters. AWACS can relay "big picture" information to C2 agencies and friendly aircraft. AWACS provides worldwide response to situations requiring immediate on-scene C2/BM using embedded real-time surveillance for employment of US and allied combat air forces. AWACS is critical to gaining and maintaining battle-space air superiority. AWACS coordinates with both tactical and C2 assets in theater to execute the air mission.

The AWACS Block 40/45 Upgrade program is the largest modification in U.S. AWACS history and represents the critical foundation and baseline system required for all future AWACS enterprise modifications including net-centric operations. The AWACS Block 40/45 Upgrade provides a single target/single track capability with an improved human-machine interface for time-critical targeting designed to increase combat effectiveness and reduce fratricide. The AWACS Block 40/45 Upgrade program includes an upgrade to Electronic Support Measures sensor data processing; Multi-Source Integration; a Data Link Infrastructure with prioritized data link bandwidth management for Link 16/Link 11; new battle management tools; capability to parse, allow user access to, and integrate Air Control Order/Air Tasking Order data; enhanced mission and console recording capabilities; and an update to a low-bandwidth internet chat capability (Secure Iridium Chat).

Executive Summary

The AWACS Block 40/45 Upgrade program remains funded for a fleet size of 24. In the FY 2016 PB, the Air Force re-phased the E-3 force reduction of seven aircraft to FY 2019. The AWACS Block 40/45 Upgrade program is already positioned in accordance with the planned FY 2019 divestiture; therefore, the program will continue to execute to a baseline of 24 aircraft.

Since submission of the June 2015 SAR, the program office completed the SCP, signed by the Assistant Secretary of the Air Force for Financial Management and Comptroller (SAF/FM) on July 31, 2015. An APB amendment was signed by the Air Force Acquisition Executive on October 20, 2015.

The AWACS Block 40/45 Upgrade program continues to meet all KPPs. During CY 2015, AWACS Block 40/45 installation and deliveries remained on schedule despite several aircraft having experienced delays due to maintenance issues unrelated to Block 40/45 installation. As of December 31, 2015, ten modified aircraft have been delivered.

In FY 2017, we intend to procure the last Commercial Off The Shelf (COTS) necessary to install 40/45 on four aircraft and refresh the six LRIP aircraft to the final configuration. The FY 2017 PB position/FYDP funding profile does not include funding to purchase COTS for any of the seven aircraft the Air Force intends to retire. If these seven aircraft are subsequently retained and modified, significant Non-Recurring Engineering may be necessary to address any COTS no longer available.

There are no significant software-related issues at this time. However, the program office is engaged with Boeing on how to control the cost of emerging cyber security requirements and the integration of urgent operational needs for internet connectivity into 40/45 hardware/software baseline.

Threshold Breaches

APB Breaches

| | |
|---------------------|--------------------------|
| Schedule | <input type="checkbox"/> |
| Performance | <input type="checkbox"/> |
| Cost | <input type="checkbox"/> |
| RDT&E | <input type="checkbox"/> |
| Procurement | <input type="checkbox"/> |
| MILCON | <input type="checkbox"/> |
| Acq O&M | <input type="checkbox"/> |
| O&S Cost | <input type="checkbox"/> |
| Unit Cost | <input type="checkbox"/> |
| PAUC | <input type="checkbox"/> |
| APUC | <input type="checkbox"/> |

Nunn-McCurdy Breaches

Current UCR Baseline

| | |
|------|------|
| PAUC | None |
| APUC | None |

Original UCR Baseline

| | |
|------|------|
| PAUC | None |
| APUC | None |

Schedule



| Schedule Events | | | | |
|--|----------------------------------|--|------------------|----------|
| Events | SAR Baseline Production Estimate | Current APB Production Objective/Threshold | Current Estimate | |
| Milestone B - System Development and Demonstration | Jul 2003 | Jul 2003 | Jul 2003 | Jul 2003 |
| Milestone C - Low-Rate Initial Production | Jan 2009 | Jan 2009 | Jan 2009 | Jan 2009 |
| Initial Operational Test and Evaluation Complete (IOT&E) | Jun 2012 | Jun 2012 | Jun 2012 | Jun 2012 |
| Full Rate Production Decision | Dec 2012 | Dec 2012 | Dec 2012 | Dec 2012 |
| IOC RAA | Apr 2014 | Jan 2014 | Jan 2014 | Jan 2014 |
| FOC RAA | Aug 2020 | Aug 2020 | Feb 2021 | Aug 2020 |

Change Explanations

None

Notes

Current estimate dates are based on FY 2017 PB and 24 aircraft fleet size. IOC RAA was declared by the PM on January 7, 2014 and Air Combat Command declared IOC on July 28, 2014.

Acronyms and Abbreviations

FOC RAA - Full Operational Capability - Required Assets Available
 IOC RAA - Initial Operational Capability - Required Assets Available

Performance

| Performance Characteristics | | | | |
|---|--|--|---|---|
| SAR Baseline Production Estimate | Current APB Production Objective/Threshold | Demonstrated Performance | Current Estimate | |
| Multi-Source Integration | | | | |
| (Objective = Threshold) All target data shall be correlated, fused, and integrated into a single track | (Objective = Threshold) All target data shall be correlated, fused, and integrated into a single track | All target data shall be correlated, fused, and integrated into a single track | The Beyond LRIP report confirms the system meets required threshold performance. | The Beyond LRIP report confirms the system meets required threshold performance. |
| Net Ready | | | | |
| System must fully support execution of all activities identified in joint and system integrated architectures. 1) DISR mandated GIG IT standards and profiles identified in the TV-1. 2) DISR mandated GIG KIPs identified in the KIP declaration table. 3) Net-Centric Operations and Warfare Reference Model Enterprise Services. 4) IA requirements and issuance of an ATO by the DAA. 5) Operationally-effective information exchanges and mission critical performance specified in the applicable joint and system integrated architecture views. | System must fully support execution of all activities identified in joint and system integrated architectures. 1) DISR mandated GIG IT standards and profiles identified in the TV-1. 2) DISR mandated GIG KIPs identified in the KIP declaration table. 3) Net-Centric Operations and Warfare Reference Model Enterprise Services. 4) IA requirements and issuance of an ATO by the DAA. 5) | System must fully support execution of joint critical activities identified in joint and system integrated architectures. System must satisfy the technical requirements for future transition to Net-Centric operations to include: 1) DISR mandated GIG IT standards and profiles identified in the TV-1; 2) DISR mandated GIG KIPs identified in the KIP declaration table; 3) Net-Centric Operations and Warfare Reference Model Enterprise Services; 4) IA requirements and issuance of an IATO by the DAA; 5) Operationally-effective information exchanges and mission critical performance specified in the applicable joint and system integrated architecture views. | Per Joint Interoperability Test Command letter dated October 25, 2012, "The AWACS Block 40/45 Upgrade, V10.1.20i meets the joint critical interoperability requirements in the Joint Staff-certified AWACS Block 40/45 Upgrade Program ISP, 17 October 2011". Air Force C2 Platform Information Technology DAA issued an IATO on January 11, 2012. Subsequent IATOs and ATOs have been introduced for each software version afterwards. | Each version/release of Block 40/45 continues to be approved for use by an IATO or ATO. |

Classified Performance information is provided in the classified annex to this submission.

Requirements Reference

ORD (Combat Air Forces 010-02-I/II) dated June 16, 2009 (in lieu of CPD)

Change Explanations

None

Acronyms and Abbreviations

AEW&C - Airborne Early Warning and Control
ATO - Approval to Operate
DAA - Designated Approving Authority
DISR - Department of Defense Information Technology Standards Registry
DOT&E - Director of Operational Test & Evaluation
GIG - Global Information Grid
IA - Information Assurance
IATO - Interim Approval to Operate
ISP - Information Support Plan
IT - Information Technology
KIP - Key Interface Profile
TV-1 - Technical View 1

Track to Budget

| RDT&E | | |
|-----------|---------|----------------|
| Appn | BA | PE |
| Air Force | 3600 | 07 0207417F |
| | Project | Name |
| | 67411L | AWACS (Shared) |

| Procurement | | |
|-------------|-----------|--------------------------------------|
| Appn | BA | PE |
| Air Force | 3010 | 06 0207417F |
| | Line Item | Name |
| | 000999 | Initial Spares (Shared) |
| Air Force | 3010 | 05 0207417F |
| | Line Item | Name |
| | E00300 | E-3 (Shared) |
| | E34045 | Airborne Warning and Control Systems |

Notes

The Procurement funding for the AWACS Block 40/45 Upgrade program is located in modification number 50001T.

Funding for this modification is located in two P-1 Line Item Numbers. AWACS Block 40/45 funding had previously been contained in Weapon System Code (WSC) E00300, but as part of the Major Programs Transparency Initiative and starting in FY 2015, the AWACS Block 40/45 Upgrade was moved to WSC E34045. Prior year funding remains in WSC E00300.

Cost and Funding

Cost Summary

| Appropriation | Total Acquisition Cost | | | | | | |
|----------------|----------------------------------|--|------------------|----------------------------------|----------------------------------|------------------|--------|
| | BY 2012 \$M | | BY 2012 \$M | TY \$M | | | |
| | SAR Baseline Production Estimate | Current APB Production Objective/Threshold | Current Estimate | SAR Baseline Production Estimate | Current APB Production Objective | Current Estimate | |
| RDT&E | 1319.0 | 1272.6 | 1415.8 | 1273.2 | 1192.2 | 1145.9 | 1145.9 |
| Procurement | 1503.4 | 1389.8 | 1527.4 | 1382.0 | 1615.4 | 1496.5 | 1479.0 |
| Flyaway | -- | -- | -- | 1344.8 | -- | -- | 1439.0 |
| Recurring | -- | -- | -- | 934.7 | -- | -- | 997.3 |
| Non Recurring | -- | -- | -- | 410.1 | -- | -- | 441.7 |
| Support | -- | -- | -- | 37.2 | -- | -- | 40.0 |
| Other Support | -- | -- | -- | 0.0 | -- | -- | 0.0 |
| Initial Spares | -- | -- | -- | 37.2 | -- | -- | 40.0 |
| MILCON | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Acq O&M | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 2822.4 | 2662.4 | N/A | 2655.2 | 2807.6 | 2642.4 | 2624.9 |

Current APB Cost Estimate Reference

AWACS Block 40/45 FRP SCP Update dated July 28, 2015

Confidence Level

Confidence Level of cost estimate for current APB: 53%

The Life-Cycle Cost Estimate (LCCE) confidence level of 53% reflects the expected value, or mean, of the cost estimate distribution. It takes into consideration relevant risks, including ordinary levels of external and unforeseen events, aiming to provide sufficient resources to execute the program under normal conditions encountering average levels of technical, schedule, and programmatic risk and external influence.

| Quantity | Total Quantity | | |
|-------------|----------------------------------|------------------------|------------------|
| | SAR Baseline Production Estimate | Current APB Production | Current Estimate |
| RDT&E | 0 | 0 | 0 |
| Procurement | 31 | 24 | 24 |
| Total | 31 | 24 | 24 |

Quantity Notes

Throughout the Cost and Funding section, the quantity of 24 reflects kit procurement and not kit installations. To date, the program has procured and delivered 16 kits, 10 of which have been installed on aircraft.

Cost and Funding

Funding Summary

| Appropriation Summary | | | | | | | | | |
|---|--------|---------|---------|---------|---------|---------|---------|-------------|--------|
| FY 2017 President's Budget / December 2015 SAR (TY\$ M) | | | | | | | | | |
| Appropriation | Prior | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | To Complete | Total |
| RDT&E | 1145.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1145.9 |
| Procurement | 866.9 | 183.6 | 227.9 | 106.6 | 61.4 | 32.6 | 0.0 | 0.0 | 1479.0 |
| MILCON | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Acq O&M | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| PB 2017 Total | 2012.8 | 183.6 | 227.9 | 106.6 | 61.4 | 32.6 | 0.0 | 0.0 | 2624.9 |
| PB 2016 Total | 2018.3 | 188.8 | 230.9 | 106.8 | 61.5 | 47.8 | 0.0 | 0.0 | 2654.1 |
| Delta | -5.5 | -5.2 | -3.0 | -0.2 | -0.1 | -15.2 | 0.0 | 0.0 | -29.2 |

| Quantity Summary | | | | | | | | | | |
|---|---------------|-------|---------|---------|---------|---------|---------|---------|-------------|-------|
| FY 2017 President's Budget / December 2015 SAR (TY\$ M) | | | | | | | | | | |
| Quantity | Undistributed | Prior | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | To Complete | Total |
| Development | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Production | 0 | 18 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 24 |
| PB 2017 Total | 0 | 18 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 24 |
| PB 2016 Total | 0 | 18 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 24 |
| Delta | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Cost and Funding

Annual Funding By Appropriation

| Annual Funding 3600 RDT&E Research, Development, Test, and Evaluation, Air Force | | | | | | | |
|---|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|
| Fiscal Year | Quantity | TY \$M | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program |
| 1999 | -- | -- | -- | -- | -- | -- | 0.9 |
| 2000 | -- | -- | -- | -- | -- | -- | 14.2 |
| 2001 | -- | -- | -- | -- | -- | -- | 10.1 |
| 2002 | -- | -- | -- | -- | -- | -- | 17.8 |
| 2003 | -- | -- | -- | -- | -- | -- | 116.0 |
| 2004 | -- | -- | -- | -- | -- | -- | 193.0 |
| 2005 | -- | -- | -- | -- | -- | -- | 243.7 |
| 2006 | -- | -- | -- | -- | -- | -- | 106.3 |
| 2007 | -- | -- | -- | -- | -- | -- | 127.9 |
| 2008 | -- | -- | -- | -- | -- | -- | 90.7 |
| 2009 | -- | -- | -- | -- | -- | -- | 69.9 |
| 2010 | -- | -- | -- | -- | -- | -- | 50.1 |
| 2011 | -- | -- | -- | -- | -- | -- | 85.1 |
| 2012 | -- | -- | -- | -- | -- | -- | 5.8 |
| 2013 | -- | -- | -- | -- | -- | -- | 3.1 |
| 2014 | -- | -- | -- | -- | -- | -- | 11.3 |
| Subtotal | -- | -- | -- | -- | -- | -- | 1145.9 |

| Annual Funding 3600 RDT&E Research, Development, Test, and Evaluation, Air Force | | | | | | | |
|---|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|
| Fiscal Year | Quantity | BY 2012 \$M | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program |
| 1999 | -- | -- | -- | -- | -- | -- | 1.1 |
| 2000 | -- | -- | -- | -- | -- | -- | 17.6 |
| 2001 | -- | -- | -- | -- | -- | -- | 12.4 |
| 2002 | -- | -- | -- | -- | -- | -- | 21.6 |
| 2003 | -- | -- | -- | -- | -- | -- | 138.7 |
| 2004 | -- | -- | -- | -- | -- | -- | 225.0 |
| 2005 | -- | -- | -- | -- | -- | -- | 276.9 |
| 2006 | -- | -- | -- | -- | -- | -- | 117.3 |
| 2007 | -- | -- | -- | -- | -- | -- | 137.5 |
| 2008 | -- | -- | -- | -- | -- | -- | 95.6 |
| 2009 | -- | -- | -- | -- | -- | -- | 72.7 |
| 2010 | -- | -- | -- | -- | -- | -- | 51.4 |
| 2011 | -- | -- | -- | -- | -- | -- | 85.8 |
| 2012 | -- | -- | -- | -- | -- | -- | 5.7 |
| 2013 | -- | -- | -- | -- | -- | -- | 3.0 |
| 2014 | -- | -- | -- | -- | -- | -- | 10.9 |
| Subtotal | -- | -- | -- | -- | -- | -- | 1273.2 |

| Annual Funding 3010 Procurement Aircraft Procurement, Air Force | | | | | | | |
|--|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|
| Fiscal Year | Quantity | TY \$M | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program |
| 2008 | -- | -- | 0.2 | 2.4 | 2.6 | -- | 2.6 |
| 2009 | 1 | 32.5 | 15.3 | 13.4 | 61.2 | 2.9 | 64.1 |
| 2010 | 2 | 45.7 | 6.5 | 12.1 | 64.3 | 0.5 | 64.8 |
| 2011 | 3 | 113.0 | 20.7 | 28.8 | 162.5 | 2.8 | 165.3 |
| 2012 | 5 | 106.8 | 7.7 | 3.8 | 118.3 | 3.6 | 121.9 |
| 2013 | -- | -- | 66.0 | 71.4 | 137.4 | 5.4 | 142.8 |
| 2014 | 2 | 60.7 | 6.0 | 42.1 | 108.8 | 2.3 | 111.1 |
| 2015 | 5 | 100.2 | 38.5 | 52.6 | 191.3 | 3.0 | 194.3 |
| 2016 | 2 | 64.7 | 7.5 | 106.1 | 178.3 | 5.3 | 183.6 |
| 2017 | 4 | 114.4 | 58.3 | 50.7 | 223.4 | 4.5 | 227.9 |
| 2018 | -- | 59.3 | 6.6 | 37.5 | 103.4 | 3.2 | 106.6 |
| 2019 | -- | 31.4 | 6.2 | 20.6 | 58.2 | 3.2 | 61.4 |
| 2020 | -- | 23.5 | 5.6 | 0.2 | 29.3 | 3.3 | 32.6 |
| Subtotal | 24 | 752.2 | 245.1 | 441.7 | 1439.0 | 40.0 | 1479.0 |

| Annual Funding 3010 Procurement Aircraft Procurement, Air Force | | | | | | | |
|--|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|
| Fiscal Year | Quantity | BY 2012 \$M | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program |
| 2008 | -- | -- | 0.2 | 2.5 | 2.7 | -- | 2.7 |
| 2009 | 1 | 33.3 | 15.6 | 13.7 | 62.6 | 3.0 | 65.6 |
| 2010 | 2 | 45.9 | 6.5 | 12.2 | 64.6 | 0.5 | 65.1 |
| 2011 | 3 | 111.7 | 20.5 | 28.4 | 160.6 | 2.8 | 163.4 |
| 2012 | 5 | 104.0 | 7.5 | 3.7 | 115.2 | 3.5 | 118.7 |
| 2013 | -- | -- | 63.0 | 68.1 | 131.1 | 5.2 | 136.3 |
| 2014 | 2 | 57.1 | 5.6 | 39.7 | 102.4 | 2.2 | 104.6 |
| 2015 | 5 | 93.1 | 35.8 | 48.8 | 177.7 | 2.8 | 180.5 |
| 2016 | 2 | 59.0 | 6.8 | 96.8 | 162.6 | 4.8 | 167.4 |
| 2017 | 4 | 102.3 | 52.2 | 45.4 | 199.9 | 4.0 | 203.9 |
| 2018 | -- | 52.0 | 5.8 | 32.9 | 90.7 | 2.8 | 93.5 |
| 2019 | -- | 27.0 | 5.3 | 17.7 | 50.0 | 2.8 | 52.8 |
| 2020 | -- | 19.8 | 4.7 | 0.2 | 24.7 | 2.8 | 27.5 |
| Subtotal | 24 | 705.2 | 229.5 | 410.1 | 1344.8 | 37.2 | 1382.0 |

| Cost Quantity Information 3010 Procurement Aircraft Procurement, Air Force | | |
|---|----------|--|
| Fiscal Year | Quantity | End Item Recurring Flyaway (Aligned With Quantity) BY 2012 \$M |
| 2008 | -- | -- |
| 2009 | 1 | 33.3 |
| 2010 | 2 | 45.9 |
| 2011 | 3 | 111.4 |
| 2012 | 5 | 103.0 |
| 2013 | -- | -- |
| 2014 | 2 | 62.4 |
| 2015 | 5 | 110.0 |
| 2016 | 2 | 103.3 |
| 2017 | 4 | 135.9 |
| 2018 | -- | -- |
| 2019 | -- | -- |
| 2020 | -- | -- |
| Subtotal | 24 | 705.2 |

Low Rate Initial Production

| Item | Initial LRIP Decision | Current Total LRIP |
|--------------------------|-----------------------|--------------------|
| Approval Date | 11/24/2008 | 11/24/2008 |
| Approved Quantity | 6 | 6 |
| Reference | Milestone C ADM | Milestone C ADM |
| Start Year | 2009 | 2009 |
| End Year | 2014 | 2015 |

The Current Total LRIP Quantity is more than 10% of the total production quantity due to operational requirements.

Air Combat Command identified a requirement for five AWACS Block 40/45 Upgrade aircraft for IOC declaration. The program office requested an LRIP quantity of six to utilize the first modified aircraft as a risk reduction asset to streamline the process of combining a major upgrade with Programmed Depot Maintenance. In addition, the first aircraft was required to support production qualification testing.

The Start Year indicated specifies the year that the LRIP contract (Delivery Order 23) was awarded. The program procured one 40/45 shipset in FY 2009, two 40/45 shipsets in FY 2010 and three 40/45 shipsets in FY 2011. The Current End Year indicated above specifies the completion of the contract Period of Performance (PoP).

The PoP was extended to July 2015 to complete the provisioning effort.

Foreign Military Sales

None

Nuclear Costs

None

Unit Cost

Unit Cost Report

| Item | BY 2012 \$M | BY 2012 \$M | % Change |
|------|--|------------------------------------|----------|
| | Current UCR Baseline (Oct 2015 APB) | Current Estimate (Dec 2015 SAR) | |

Program Acquisition Unit Cost

| | | | |
|-----------|---------|---------|-------|
| Cost | 2662.4 | 2655.2 | |
| Quantity | 24 | 24 | |
| Unit Cost | 110.933 | 110.633 | -0.27 |

Average Procurement Unit Cost

| | | | |
|-----------|--------|--------|-------|
| Cost | 1389.8 | 1382.0 | |
| Quantity | 24 | 24 | |
| Unit Cost | 57.908 | 57.583 | -0.56 |

| Item | BY 2012 \$M | BY 2012 \$M | % Change |
|------|---|------------------------------------|----------|
| | Original UCR Baseline (May 2013 APB) | Current Estimate (Dec 2015 SAR) | |

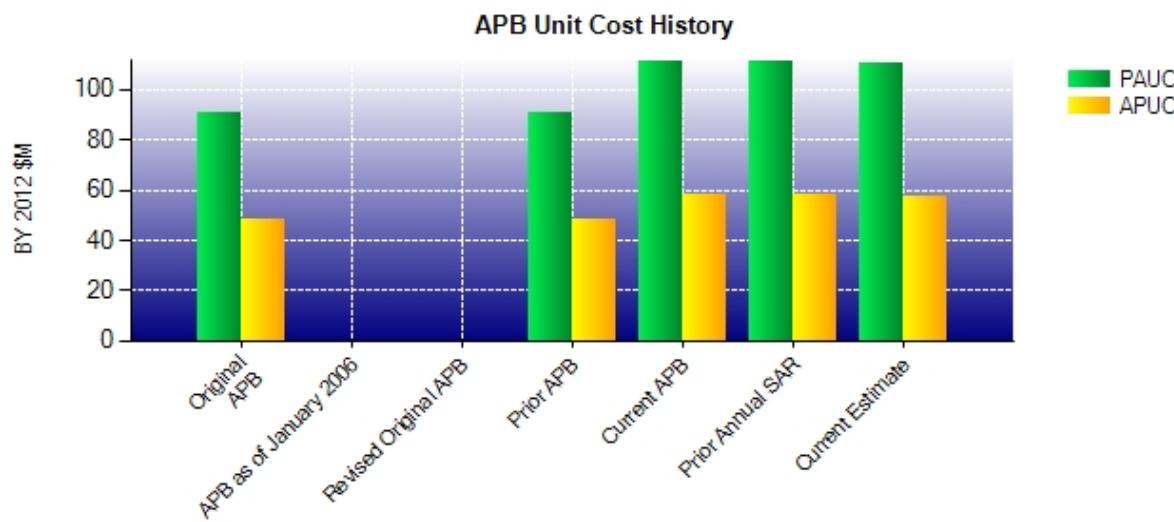
Program Acquisition Unit Cost

| | | | |
|-----------|--------|---------|--------|
| Cost | 2822.4 | 2655.2 | |
| Quantity | 31 | 24 | |
| Unit Cost | 91.045 | 110.633 | +21.51 |

Average Procurement Unit Cost

| | | | |
|-----------|--------|--------|--------|
| Cost | 1503.4 | 1382.0 | |
| Quantity | 31 | 24 | |
| Unit Cost | 48.497 | 57.583 | +18.74 |

Unit Cost History



| Item | Date | BY 2012 \$M | | TY \$M | |
|------------------------|----------|-------------|--------|---------|--------|
| | | PAUC | APUC | PAUC | APUC |
| Original APB | May 2013 | 91.045 | 48.497 | 90.568 | 52.110 |
| APB as of January 2006 | N/A | N/A | N/A | N/A | N/A |
| Revised Original APB | N/A | N/A | N/A | N/A | N/A |
| Prior APB | May 2013 | 91.045 | 48.497 | 90.568 | 52.110 |
| Current APB | Oct 2015 | 110.933 | 57.908 | 110.100 | 62.354 |
| Prior Annual SAR | Dec 2014 | 111.383 | 57.821 | 110.588 | 62.217 |
| Current Estimate | Dec 2015 | 110.633 | 57.583 | 109.371 | 61.625 |

SAR Unit Cost History

| Current SAR Baseline to Current Estimate (TY \$M) | | | | | | | | | |
|---|---------|--------|--------|-------|-------|-------|--------|--------|-----------------------------|
| Initial PAUC Production Estimate | Changes | | | | | | | | PAUC Current Estimate |
| | Econ | Qty | Sch | Eng | Est | Oth | Spt | Total | |
| 90.568 | -0.308 | 15.623 | -0.912 | 0.000 | 4.562 | 0.000 | -0.162 | 18.803 | 109.371 |

| Current SAR Baseline to Current Estimate (TY \$M) | | | | | | | | | |
|---|---------|-------|--------|-------|-------|-------|--------|-------|-----------------------------|
| Initial APUC Production Estimate | Changes | | | | | | | | APUC Current Estimate |
| | Econ | Qty | Sch | Eng | Est | Oth | Spt | Total | |
| 52.110 | -0.317 | 4.407 | -0.217 | 0.000 | 5.804 | 0.000 | -0.162 | 9.515 | 61.625 |

| SAR Baseline History | | | | |
|----------------------|-----------------------|--------------------------|-------------------------|------------------|
| Item | SAR Planning Estimate | SAR Development Estimate | SAR Production Estimate | Current Estimate |
| Milestone A | N/A | N/A | N/A | N/A |
| Milestone B | N/A | N/A | Jul 2003 | Jul 2003 |
| Milestone C | N/A | N/A | Jan 2009 | Jan 2009 |
| IOC | N/A | N/A | Apr 2014 | Jan 2014 |
| Total Cost (TY \$M) | N/A | N/A | 2807.6 | 2624.9 |
| Total Quantity | N/A | N/A | 31 | 24 |
| PAUC | N/A | N/A | 90.568 | 109.371 |

Cost Variance

| Item | Summary TY \$M | | | |
|------------------------------------|----------------|---------------|-----------|---------------|
| | RDT&E | Procurement | MILCON | Total |
| SAR Baseline (Production Estimate) | 1192.2 | 1615.4 | -- | 2807.6 |
| Previous Changes | | | | |
| Economic | +0.9 | +0.5 | -- | +1.4 |
| Quantity | -- | -259.0 | -- | -259.0 |
| Schedule | -16.7 | -5.2 | -- | -21.9 |
| Engineering | -- | -- | -- | -- |
| Estimating | -15.5 | +145.3 | -- | +129.8 |
| Other | -- | -- | -- | -- |
| Support | -- | -3.8 | -- | -3.8 |
| Subtotal | -31.3 | -122.2 | -- | -153.5 |
| Current Changes | | | | |
| Economic | -0.7 | -8.1 | -- | -8.8 |
| Quantity | -- | -- | -- | -- |
| Schedule | -- | -- | -- | -- |
| Engineering | -- | -- | -- | -- |
| Estimating | -14.3 | -6.0 | -- | -20.3 |
| Other | -- | -- | -- | -- |
| Support | -- | -0.1 | -- | -0.1 |
| Subtotal | -15.0 | -14.2 | -- | -29.2 |
| Adjustments | -- | -- | -- | -- |
| Total Changes | -46.3 | -136.4 | -- | -182.7 |
| CE - Cost Variance | 1145.9 | 1479.0 | -- | 2624.9 |
| CE - Cost & Funding | 1145.9 | 1479.0 | -- | 2624.9 |

| Item | Summary BY 2012 \$M | | | |
|------------------------------------|---------------------|---------------|--------|---------------|
| | RDT&E | Procurement | MILCON | Total |
| SAR Baseline (Production Estimate) | 1319.0 | 1503.4 | -- | 2822.4 |
| Previous Changes | | | | |
| Economic | -- | -- | -- | -- |
| Quantity | -- | -227.1 | -- | -227.1 |
| Schedule | -17.9 | -6.4 | -- | -24.3 |
| Engineering | -- | -- | -- | -- |
| Estimating | -15.6 | +122.2 | -- | +106.6 |
| Other | -- | -- | -- | -- |
| Support | -- | -4.4 | -- | -4.4 |
| Subtotal | -33.5 | -115.7 | -- | -149.2 |
| Current Changes | | | | |
| Economic | -- | -- | -- | -- |
| Quantity | -- | -- | -- | -- |
| Schedule | -- | -- | -- | -- |
| Engineering | -- | -- | -- | -- |
| Estimating | -12.3 | -5.7 | -- | -18.0 |
| Other | -- | -- | -- | -- |
| Support | -- | -- | -- | -- |
| Subtotal | -12.3 | -5.7 | -- | -18.0 |
| Adjustments | -- | -- | -- | -- |
| Total Changes | -45.8 | -121.4 | -- | -167.2 |
| CE - Cost Variance | 1273.2 | 1382.0 | -- | 2655.2 |
| CE - Cost & Funding | 1273.2 | 1382.0 | -- | 2655.2 |

Previous Estimate: June 2015

| RDT&E | \$M | |
|---|-----------|-----------|
| Current Change Explanations | Base Year | Then Year |
| Revised escalation indices. (Economic) | N/A | -0.7 |
| Adjustment for current and prior escalation. (Estimating) | +0.6 | +0.6 |
| Realignment of funds from AWACS Blk 40/45 to support Combat Identification program. (Estimating) | -12.9 | -14.9 |
| RDT&E Subtotal | -12.3 | -15.0 |

| Procurement | \$M | |
|--|-----------|-----------|
| Current Change Explanations | Base Year | Then Year |
| Revised escalation indices. (Economic) | N/A | -8.1 |
| Adjustment for current and prior escalation. (Estimating) | +4.1 | +4.2 |
| Realignment of funding from AWACS Blk 40/45 to source the Next-Generation Identification Friend or Foe and Training Support Infrastructure requirements. (Estimating) | -9.8 | -10.2 |
| Adjustment for current and prior escalation. (Support) | +0.1 | +0.2 |
| Decrease in Initial Spares. (Support) | -0.1 | -0.3 |
| Procurement Subtotal | -5.7 | -14.2 |

Contracts

Contract Identification

| | |
|-----------------------------|--|
| Appropriation: | Procurement |
| Contract Name: | AWACS 40/45 Upgrade Program Full Rate Production |
| Contractor: | The Boeing Company |
| Contractor Location: | P.O. Box 3707 Seattle, WA 98124-2207 |
| Contract Number: | F19628-01-D-0016/26 |
| Contract Type: | Fixed Price Incentive(Firm Target) (FPIF) |
| Award Date: | December 27, 2012 |
| Definitization Date: | December 27, 2012 |

Contract Price

| Initial Contract Price (\$M) | | | Current Contract Price (\$M) | | | Estimated Price At Completion (\$M) | |
|------------------------------|---------|-----|------------------------------|---------|-----|-------------------------------------|-----------------|
| Target | Ceiling | Qty | Target | Ceiling | Qty | Contractor | Program Manager |
| 137.3 | 142.5 | N/A | 205.3 | 249.1 | N/A | 182.1 | 175.7 |

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the award of Next Generation Identification Friend or Foe Integration and FRP Shipsets #12 and 13.

Contract Variance

| Item | Cost Variance | Schedule Variance |
|--|---------------|-------------------|
| Cumulative Variances To Date (1/28/2016) | +10.8 | -3.2 |
| Previous Cumulative Variances | +1.7 | -7.7 |
| Net Change | +9.1 | +4.5 |

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to improvements in cost performance of CLINs 3606, 3610, and 3613. The government-contractor team has been effective in controlling Shipset costs over the period July 2015 to December 2015.

The favorable net change in the schedule variance is due to strong recovery in the schedule variances for CLINs 3606 and 3613, over the period July 2015 to January 2016.

Notes

Earned Value Management Data is received only for specific CLINs listed below representing \$178.2M, 61% of the total contract value.

CLIN 3300 Engineering Support to Diminishing Manufacturing Sources Upgrade

CLIN 3606 FRP #1 Shipsets for aircraft P7 - P11

CLIN 3608 Life of Type Buy

CLIN 3613 FRP Shipsets # P12 and P13

CLIN 3302 Next Generation Identification Friend or Foe Integration

CLIN 3610 FRP Shipsets for aircraft P14 - P18

Deliveries and Expenditures

| Deliveries | | | | |
|----------------------------------|-----------------|----------------|----------------|-------------------|
| Delivered to Date | Planned to Date | Actual to Date | Total Quantity | Percent Delivered |
| Development | 0 | 0 | 0 | -- |
| Production | 10 | 10 | 24 | 41.67% |
| Total Program Quantity Delivered | 10 | 10 | 24 | 41.67% |

Expended and Appropriated (TY \$M)

| | | | |
|------------------------|--------|----------------------------|--------|
| Total Acquisition Cost | 2624.9 | Years Appropriated | 18 |
| Expended to Date | 1523.7 | Percent Years Appropriated | 81.82% |
| Percent Expended | 58.05% | Appropriated to Date | 2196.4 |
| Total Funding Years | 22 | Percent Appropriated | 83.68% |

The above data is current as of February 09, 2016.

Operating and Support Cost

Cost Estimate Details

| | |
|--------------------------|-------------------|
| Date of Estimate: | July 31, 2015 |
| Source of Estimate: | SCP |
| Quantity to Sustain: | 24 |
| Unit of Measure: | Aircraft |
| Service Life per Unit: | 25.00 Years |
| Fiscal Years in Service: | FY 2011 - FY 2035 |

O&S cost estimate reflects revised SCP dated July 31, 2015.

Sustainment Strategy

- Production will leave the AWACS fleet with two COTS Diminishing Manufacturing Sources (DMS) versions (DMS 3.0 and DMS 4.0) going into the O&S phase
- DMS tech refresh every 5 years starting in FY 2019 through life of program
- O&S COTS procured with AF O&M funding
- O&S COTS installed by Air Logistics Complex (ALC) during Programmed Depot Maintenance or a dedicated modification installation line
- Software maintained organically with contractor support/partnership
- COTS, active DMS and DMS refreshes done with contractor partnership
- No modifications or capability upgrades included other than planned DMS tech refresh
- Product Support Business Case Analysis (PSBCA) initiated in November 2015

Antecedent Information

AWACS Block 30/35 O&S cost is based on historical Block 30/35 O&S cost projected through FY 2035. These costs are used for comparison to Block 40/45 O&S costs. This comparison assumes Block 30/35 can be maintained through FY 2035 and assumes no major DMS issues (Status Quo). Block 30/35 cost was obtained from the Air Force Total Ownership Cost (AFTOC) database for a period of FY 2007-2011. The data was normalized to BY2012 and projected out through FY 2035.

| Annual O&S Costs BY2012 \$M | | |
|--------------------------------|---|--|
| Cost Element | AWACS Blk 40/45 Upgrade Average Annual Cost Per Aircraft | AWACS Blk 30/35 (Antecedent) Average Annual Cost Per Aircraft |
| Unit-Level Manpower | 0.000 | 11.733 |
| Unit Operations | 0.000 | 6.162 |
| Maintenance | 0.520 | 8.318 |
| Sustaining Support | 0.299 | 1.203 |
| Continuing System Improvements | 0.098 | 0.737 |
| Indirect Support | 0.000 | 3.583 |
| Other | 0.000 | 0.000 |
| Total | 0.917 | 31.736 |

AWACS Block 40/45 Upgrade program Yearly Average per Aircraft costs represent the additional funding required per aircraft when compared to the antecedent AWACS Block 30/35 yearly average per Aircraft O&S costs. Thus, these costs are due solely to the AWACS Block 40/45 Upgrade.

| Item | Total O&S Cost \$M | | | |
|------------------|---|------------------|-------|---------------------------------|
| | AWACS Blk 40/45 Upgrade | | | AWACS Blk 30/35 (Antecedent) |
| | Current Production APB Objective/Threshold | Current Estimate | | |
| Base Year | 550.0 | 605.0 | 550.0 | 19041.1 |
| Then Year | 731.3 | N/A | 731.0 | N/A |

The AWACS Block 40/45 Upgrade program Current Estimate is the delta cost from the AWACS Block 30/35 (Antecedent) Current Estimate, reflecting the total O&S cost of the AWACS Enterprise.

Equation to Translate Annual Cost to Total Cost

Average annual cost per AWACS aircraft (24) (entire fleet) is calculated by taking the total AWACS 40/45 system cost (\$550.0M) and dividing by the life of the platform (FY 2011-2035, 25 years) and then dividing by the total quantity of aircraft (24). $\$550.0M / 25 / 24 = \$0.917M$.

| O&S Cost Variance | | |
|--|----------------|--|
| Category | BY 2012 \$M | Change Explanations |
| Prior SAR Total O&S Estimates - Jun 2015 SAR | 1020.8 | |
| Programmatic/Planning Factors | 0.0 | |
| Cost Estimating Methodology | -470.8 | Cost model revised and new basis from AFTOC updated from 2012 to 2015 data |
| Cost Data Update | 0.0 | |
| Labor Rate | 0.0 | |
| Energy Rate | 0.0 | |
| Technical Input | 0.0 | |

| | |
|------------------|--------|
| Other | 0.0 |
| Total Changes | -470.8 |
| Current Estimate | 550.0 |

Disposal Estimate Details

Date of Estimate:

Source of Estimate:

Disposal/Demilitarization Total Cost (BY 2012 \$M):

There are no disposal costs associated specifically with the AWACS Block 40/45 Upgrade.